Information Strategies Workgroup

NWQMC - National Water Quality Monitoring Council

From Data to Information to Action

The National Water Quality Monitoring Council

In 1992, the United States Office of Management and Budget (OMB) issued an official statement requiring the review and evaluation of national water quality monitoring activities and the development of recommendations for improvements. Later that year, the Intergovernmental Task Force on Monitoring Water Quality (ITFM) was formed to respond to this challenge. ITFM's charge was to develop a voluntary, integrated, nationwide monitoring strategy.

During its three-year duration, the Task Force was chaired by the United States Environmental Protection Agency (USEPA) and co-chaired by the United States Geological Survey (USGS). Members of the task force included representatives from federal and state agencies. After three years of work, the ITFM produced its final report containing principal recommendations on many issues, including:

- Monitoring framework
- Data collection methods
- Environmental indicators
- Data management
- Assessment and reporting approaches

Creating a framework for collaboration and comparability among programs was identified as one of the goals necessary to the development of a national monitoring strategy. Collaboration among programs is possible if there is both the technical and institutional framework to promote data comparability to assure data of known quality. Collaboration is greatly enhanced when programs employ common strategies for data storage, retrieval, analysis, interpretation, and reporting.

In May 1997, the National Water Quality Monitoring Council was chartered under the Federal Advisory Committee Act (FACA), succeeding ITFM. The Council's charge is to implement a nationwide strategy to improve water quality monitoring, assessment, and reporting.

Why focus on collaboration and comparability?

Each year, government agencies (local, state, tribal, and federal), industry, academic researchers, and a wide variety of private organizations in the United States devote enormous amounts of time and several billion dollars to the monitoring, protection, and restoration of water resources and watersheds. This work includes:

- Monitoring the status and trends in water quality
- Identifying and ranking existing and emerging problems
- Designing and implementing resource management programs
- Determining compliance with regulatory programs

The information gathered through these activities is certainly useful to the data collectors themselves. However, critical differences in project design, methods, data analysis, and data management have often made it difficult for monitoring information to be shared by other potential data users. Accurate, cost-effective and efficient assessment of the nation's water resources—within and among watersheds—requires that monitoring entities work collaboratively and strive for comparability in methods, data management, and data analysis. The design and implementation of assessment and management programs should be a cooperative product of the various monitoring agencies and organizations active in any given watershed.

The Information Strategies Workgroup

The Information Strategies Workgroup is a partnership of water-quality experts drawn from federal agencies, states, tribes, municipalities, industry, universities, and private organizations. It is a sub-group of the National Water Quality Monitoring Council.

The workgroup's purpose is to define and promote goal-oriented monitoring by proposing strategies for sampling, data storage and retrieval, data analysis, interpretation, and reporting in support of the evolving information needs of water-quality management.

The objectives of the workgroup are to:

- Examine the evolving nature of water quality management in the United States and the changing expectations for monitoring information
- Create and communicate monitoring design guidance that connects the information produced by monitoring efforts to long-term and current questions of management

The workgroup is a product-focused organization whose activities are designed to promote and support the key elements of its purpose statement. Specifically, the workgroup will:

- Define and specify water information goals
- Benchmark current monitoring system design efforts
- Coordinate with other groups working toward similar objectives both nationally and internationally
- Develop guidance for the monitoring community

Workgroup membership

Workgroup members are drawn from all geographic areas of the United States. Members have a wide variety of technical and administrative experience related to monitoring system design, data analysis, and data management issues as they relate to water quality management.

Current members represent federal agencies, state government, academia, and professional organizations.

How can the Information Strategies Workgroup help your program?

The expertise and national representation of the workgroup will provide many benefits to the water quality monitoring community including:

- Assistance in properly defining monitoring goals
- Technical assistance in water quality monitoring system design
- Potential monitoring cost-savings
- Increased ability to use data produced by other programs
- Increased ability to use historical data sets

Information Strategies Workgroup activities

Exploring currently used data-analysis methods and their impact on producing consistent and comparable information in support of fair and equitable decision-making for water quality management purposes

Workgroup members surveyed the use of statistical data analysis methods currently applied to water quality monitoring data. The research examined:

- Data analysis methods currently employed to analyze water quality monitoring data
- Criticisms of using the methods
- How the selection of methods to analyze water quality data can impact the comparability of information used for water quality management purposes
- Options by which data analysis methods employed in water quality management can be made more transparent and auditable

The results have been published in Technical Report 01-01 of the National Water Quality Monitoring Council.

Advocating monitoring to support 21st century water quality management

The workgroup is currently drafting a paper dealing with water quality monitoring issues of the 21st century. This paper examines the challenges facing contemporary water quality managers, including such things as the impacts of water diversions, endocrine disruption, safe drinking-water issues, etc. These challenges are greatly expanding the information that monitoring programs need to provide to water quality managers. At the same time, the methods employed to analyze water quality data are not coordinated to generate consistent and comparable management information. All of this is occurring at a time when monitoring budgets are decreasing. The objective of this paper is to assess the management changes and resulting monitoring impacts in order to find new strategies for connecting monitoring activities to the information needs of management.

Future Information Strategies Workgroup activities

Creating a web-based tool for designing monitoring systems

The workgroup is exploring the feasibility of creating a monitoring system design tool that incorporates links to key sources of design guidance and support. The tool may include such features as the following:

- Methods by which the information needs of water quality managers can be related directly to the expectations placed upon monitoring activities
- Methods to select appropriate and cost-effective water quality variables to convey the expected information
- Alternative reporting methods and formats that convey water quality information in the manner most appropriate to those expecting the information
- Appropriate data analysis methods that convert water quality data into the information expected along with indications of the confidence in the results
- Guidelines for selecting sample locations, sampling frequency, and numbers of samples using the identified data analysis methods as a basis for selection

Creating a Data Analysis Methods Board

The workgroup is exploring the feasibility of creating a Data Analysis Methods Board. The new board would seek ways to introduce comparable methods into data analysis via statistical, graphical, and tabular methods, and do so using a robust "peer review" approach.

Additional information, including documents referenced in this fact sheet, can be obtained from:

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The National Water Quality Monitoring Council's webpage is: http://water.usgs.gov/wicp/acwi/monitoring/